

**REMARKS**

In the Office Action mailed January 6, 2004, the Examiner noted that claims 1-19, 22-25 and 28-38 were pending (claims 20, 21, 26 and 27 having been withdrawn from consideration) and rejected all claims. Claims 1, 16, 22, 28, 31 and 33-38 have been amended, new claim 39 has been added and, thus, in view of the forgoing claims 1-19, 22-25 and 28-39 remain pending for reconsideration which is requested. No new matter has been added. The Examiner's rejections are traversed below.

On page 2 of the Office Action, the Examiner rejected claims 1-7, 9, 11-19, 22-24, 28, 31-35 and 38 under 35 U.S.C. section 102 as anticipated by Daniels. Page 9 of the Office Action rejects claims 8, 10 and 30 under 35 U.S.C. § 103 over Daniels and Morioka. Page 10 of the Office Action rejects claim 25 under 35 U.S.C. § 103 over Daniels and Bossut. Page 10 of the Office Action rejects claim 37 under 35 U.S.C. § 103 over Daniels and Kiss.

As previously noted, Daniels discusses a method for painting three-dimensional (3D) objects where an artist first applies brush strokes to paint a selected view of an object in two-dimensional (2D) space, and the 2D stroke points are later translated to 3D stroke points to make the artist feel like the artist is in effect drawing color directly onto a 3D surface. In particular Daniels teaches:

After a 3-D model of an object is generated, a view of the object is selected for painting. An artist applies brush strokes to paint the selected view of the object in 2-D space. The brush strokes are mapped onto the surfaces of the object in 3-D space, generating 3-D brush strokes. These 3-D brush strokes are then projected onto the 2-D views in the animation frames, generating projected 2-D brush strokes which are used to paint the views in the animation frames.  
(See Col. 2, lines 31-42)

As can be seen, to paint Daniels performs painting in 2D space.

The present invention, in contrast, provides for *directly* painting a surface of a 3D object without having to manipulate a corresponding 2D view.

On page 11 of the Office Action, the Examiner has interpreted the claims as being directed to a situation where the painting of the claims can be on a 2D view noting that the claims do not emphasize that the painting is done on the surface in the three dimensional space. The claims have been amended to clarify that the "painting" is "directly" the on the surface of the object "in the three dimensional or higher space" (see claims 1, 22, 28, 31 and 33-38). That is, the painting is not on a 2D view where it is transformed to the 3D object as in Daniels but

directly on the 3D object. As a result, the present invention avoids the screen-space projection technique that causes brush distortion, smears, etc.

Daniels also teaches away from the direct 3D surface painting of the present invention by saying that it is not natural, not practical, too expensive and essentially impossible because of camera view limitations (see col. 1, line 63 - col. 2, line 23).

The remaining references of Morioka, Bossut and Kiss also do not address painting directly in three dimensions on a surface of a three-dimensional object.

Claim 22 also emphasizes projecting texture on a brush and then painting the texture on the surface. The portion of Daniels referred to by the Examiner concerns a stroke mapper routine and says nothing about a texture effect brush or how to apply texture with a brush. The remaining references of Morioka, Bossut and Kiss also do not address applying texture. For this further reason, claim 22 distinguishes over the prior art.

Claim 37 also emphasizes selecting or determining a brush based on an appropriate brush resolution. The Examiner acknowledges that Daniels does not disclose this (see Action page 10, lines 4 and 5). The Examiner also acknowledges that Kiss does not disclose this (see Action page 11, line 4). Bossut discusses changing the resolution or magnification of the displayed object not the resolution of the brush. The remaining reference of Morioka also does not address brush resolution. For this further reason, claim 37 distinguishes over the prior art.

It is submitted that the invention of independent claims 1, 22, 28, 31 and 33-38 distinguishes over the prior art and withdrawal of the rejection is requested.

The dependent claims depend from the above-discussed independent claims and are patentable over the prior art for the reasons discussed above. The dependent claims also emphasize distinctions over the prior art as discussed with respect to some of the dependent claims below.

The present invention emphasizes that each stamp (or brush) is positioned and oriented independent of the view (see claims 2, 31 and 36). In contrast, Daniels is view dependent where a stroke file is saved per view (see col. 12, lines 15-16).

The present invention further emphasizes the use of a 3D brush (see claim 12),. While Daniels discusses making a 2D stroke translated into a 3D stroke, Daniels does not discuss or teach three dimensional brushes, that is, the brush being 3D.

The present invention emphasizes that the brush has depth (see claim 13). Daniels paints 2D brushes in a depth order but says nothing about the brush itself having a depth.

The present invention uses normals within various portions of a brush ("normal vector of respective **portions** of the surface". In contrast, Daniels uses one normal at the brush center.

The present invention compares surface normals (see claim 15) whereas Daniels compares to a view vector.

The present invention rotates in a brush stroke direction (see claim 18) whereas Daniels rotates in a random direction.

Claim 29 emphasizes determining a radius and a depth of the brush, something that Daniels does not do since Daniels does not discuss 3D brushes as noted above.

Claim 31 call for orienting the brush. Daniels only discusses orientation with respect to leaves.

Claims 8, 10 and 30 call for using an interpolated normal for brush orientation. The Examiner notes that Daniels does not disclose this and refers to Morioka. The interpolated normals in Morioka are for modifying shading parameters. There is no teaching or suggestion in Morioka concerning using interpolated normals for brush orientation.

Claim 25 emphasizes selecting a brush resolution. The Examiner acknowledges that Daniels does not disclose this and refers to Bossut. Bossut discusses changing the resolution or magnification of the displayed object not the resolution of the brush.

The dependent claims also recite additional features not taught or suggested by the prior art as discussed above. It is submitted that the dependent claims are independently patentable over the prior art and withdrawal of the rejection is requested.

The Examiner has acknowledged that the prior art does not disclose painting in three dimensions on the three-dimensional object (see Action page 11). New 39 emphasizes painting a brush directly in three-dimensional space onto the object in the three-dimensional space. Nothing in the prior art teaches or suggests such. It is submitted that the new claim distinguishes over the prior art.

It is submitted that the claims are not taught, disclosed or suggested by the prior art. The claims are therefore in a condition suitable for allowance. An early Notice of Allowance is requested.

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If any further fees, other than and except for the issue fee, are necessary with respect to this paper, the U.S.P.T.O. is requested to obtain the same from deposit account number 19-3935.

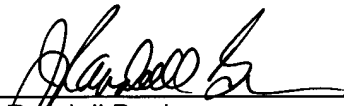
Respectfully submitted,

STAAS & HALSEY LLP

Date: \_\_\_\_\_

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By: \_\_\_\_\_

  
J. Randall Beckers  
Registration No. 30,358

1201 New York Avenue, NW, Suite 700  
Washington, D.C. 20005  
Telephone: (202) 434-1500  
Facsimile: (202) 434-1501